External Visitors

Next week Mr. Dirks will meet with Jim Bush of the House Permanent Select Committee on Intelligence.

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FOREIGN BROADCAST INFORMATION SERVICE

*FBIS is engaged in monitoring foreign public media worldwide.*

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Terrorism

FBIS is continuing to provide assistance to the Agency's counter-terrorism projects. On 27 May the newly constituted Interagency Intelligence Committee on Terrorism (IICT) welcomed the FBIS proposal to inaugurate a JPRS serial publication to be called, WORLDWIDE REPORT: TERRORISM. The new report will combine FBIS open-source collections on terrorism with material collected by the State Department and other National Foreign Intelligence Board members.

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still another case, the FBIS unit in Headquarters, the Foreign Language Service Center (FLASC), has coordinated the priority translation of a German-language TV documentary on the PLO for OCR/NEA. Originating as a citation on an FBIS Vienna Bureau video list, the project was guided by FLASC through procurement of the videotape, its conversion to audio cassette via Pictorial Services, translation by JPRS and, finally, forwarding to OTS for soundtrack dubbing.

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## OFFICE OF RESEARCH AND DEVELOPMENT

*ORD is charged with applying state-of-the-art technologies and methodologies to effect improvements in intelligence collection, analysis, and operations. We will report on significant progress achieved in applying emerging technologies to intelligence problems and notable events related to ORD's support to the Moscow Embassy security program.*

### Moscow Embassy Status

The CIA/contractor team continues to inspect the structure of the new Embassy building under construction in Moscow to determine the presence of Soviet intelligence gathering equipment.

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### Econometric Modeling Role in Making Estimates and Forecasts

While we often talk about research and development activities to improve our collection assets, we also look at ways to improve CIA analytical capabilities. [redacted] a mathematician with 25X1
the Office of Research and Development (ORD), has developed a method of increasing the execution speed (by a factor of 2000) the DDI's large econometric computer models. These models are used to estimate trends and analyze the performance of the Soviet and others' economics. The most significant benefit is the heuristic utility made possible in the modeling system. The analysts now are able to interact with the system and receive rapid responses to "what if" questions they choose to pose within the context of their model.

With the aid of this interface, [redacted] of DDI/SOVA authored the attached articles in the "International Economic & Energy Weekly" and "USSR Monthly Report". He was able to generate and analyze about 150 economic scenarios which formed the basis of the Agency's analytical assessment of the Soviet economy for the period 1980 - 1990. This modeling flexibility enabled the Agency to significantly expand its understanding of the Soviet economy. The articles are a reflection of our ability to make current intelligence estimates and forecasts using the system developed by [redacted] 25X1 25X1

International Economic & Energy Weekly

21 May 1982

# USSR: Guns and/or Butter in the 1980s (U)

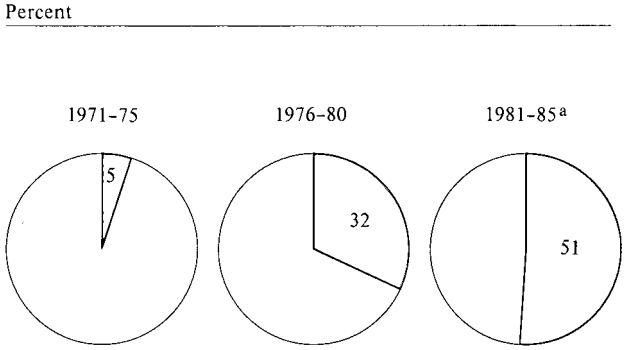
Since the early 1960s the Soviets have not had to choose between more guns or more butter. The rapidly expanding economy, fueled by large annual increases in labor, capital, and industrial raw materials, ensured enough resources for both. Although the economy has expanded more and more slowly over the last two decades, its growth has permitted Moscow to amass an ever increasing arsenal of new weaponry, provide the population with steady increases in living standards, and stoke the economic furnace with rapidly growing quantities of investment goods.

This is no longer the case. Soviet economic growth has fallen from nearly 4 percent per year during most of the 1970s to about 1 to 2 percent per year since 1978. Stagnation in the production of key industrial materials has crippled growth in machinery output—the source of military hardware, investment goods, and consumer durables. Oil production is virtually flat and the output of coal and steel is falling. Soft world oil prices and stagnant demand for Soviet arms are limiting Moscow's hard currency earnings. Three consecutive poor grain harvests have disrupted the USSR's livestock program and worsened its hard currency payments position. Moreover, persistent food shortages and increased prices for luxury goods have left many Soviet consumers with less on their tables and less in their pockets.

## The Economy in the 1980s

We expect this trend to continue through much of the 1980s as the costs and difficulties of obtaining industrial raw materials and fuels rise and the increments to labor and capital fall. First of all, whether or not oil production falls, energy output is clearly going to increase more slowly and become more expensive. The entire increment in energy production must come from Siberia, where costs are high and infrastructure minimal. Thus, large new investment must be made in roads, rail lines, and pipelines—items with heavy up-front costs and long leadtimes. Shifting the fuel balance toward natural gas will require a large buildup of distribution and storage facilities. Because only small annual increments in total investment are planned for 1981-85, energy exploitation and associated infrastructure will absorb an increasing share of investment resources.

**USSR: Energy's Share of the Investment Increment**

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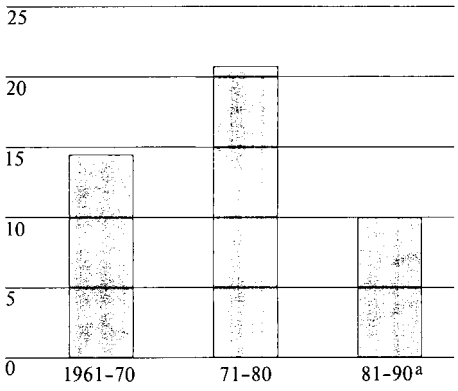
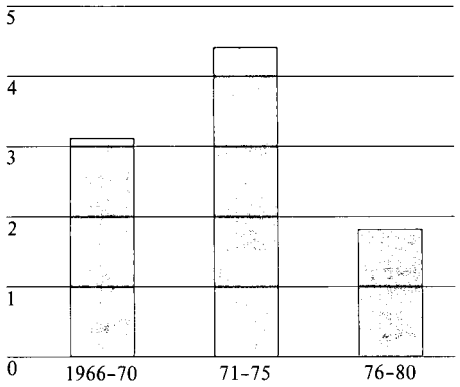
**USSR: Growth in Labor Force and Industrial Labor Productivity**

**Growth in Labor Force**
Million Persons




**Growth in Industrial Labor Productivity**
Average Annual Percent




[a] Projected.

Unclassified
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On top of the investment crunch, increments to the labor force—declining since 1977—will continue to decline until 1986 and will not regain present levels until after 1990. With growth in labor productivity nearly at a standstill, demand for labor—especially skilled workers—is likely to increase. Most of the new entrants into the labor force, however, will be from the Muslim areas of the USSR, where labor is generally less skilled and less mobile. Thus, we expect industry will do well to achieve an average annual growth of about 2 to 3 percent. The outlook for agriculture is no better. A marked—but temporary—improvement in output is likely over the next year or two if the USSR gets a break in the weather. But we see no reason to believe that sustained increases in crop yields or livestock production will be forthcoming. On balance, we expect economic growth to be only 1 to 2 percent per year by the mid-1980s and to hover near the 1-percent level through the 12th FYP (1986-90)

**The Defense Bite in the 1980s**

Under these conditions the competition for resources will be fierce—especially if defense spending is to continue increasing at its historic rate of about 4 percent per year. We estimate that defense will continue to grow at this rate through 1985 and that the defense share of GNP will be at least 15 percent by mid-decade. If these trends are not changed in the 12th FYP, the defense burden might approach 20 percent of GNP by the end of the decade. More important, the defense share of the annual increment to GNP could increase from the current level of one-fifth to as much as three-fourths by 1990. This would drastically reduce the ability of the Soviet leadership to allocate additional resources to investment and consumption, further eroding the annual growth dividend that is so important in balancing the competition for resources and stimulating productivity

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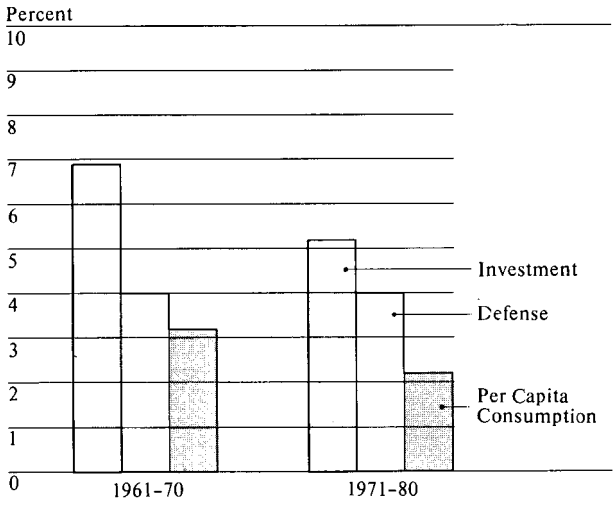
**USSR: Average Annual Rates of Growth**

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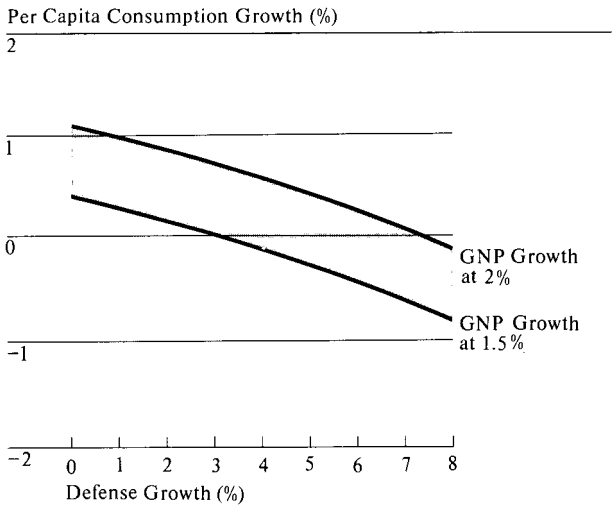
**USSR: Defense-Consumption Growth Trade-Offs (Average Annual Growth Rate 1981-1990)**

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Even though the Soviet leadership has acknowledged that defense impinges on the economy, programs now in train as well as investment in defense facilities through the late 1970s suggest that the Soviet Union had planned to at least maintain the historical 4-percent annual growth rate of defense spending. It is equally evident, however, that the USSR's 1981-85 plan fails to account properly for the economic difficulties the Soviets are facing and for the declining ability of the economy to offset slow labor growth with more capital investment. The opportunities for growth from substituting capital for labor will be limited by the continuing decline in capital productivity as well as by the need to sink most of the investment increment into capital-intensive projects (for example, energy and associated infrastructure) whose return is long deferred. All of this suggests that by mid-decade the Soviets will face a larger defense burden than they currently anticipate.

## Dynamic Defense Burden

The share of GNP devoted to defense spending in a given year can be called the static burden of defense as it represents a snapshot picture of the burden. In addition, defense spending also influences economic performance over time through its cumulative effect on economic variables. This cumulative effect is called the dynamic burden of defense spending. The most revealing measure of this burden for a country's population is the change in the average annual growth rate of per capita consumption associated with a change in the growth rate of defense spending.

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Assuming that the economic trends described above result in an average GNP growth of 1.5 to 2 percent per year for the decade (with growth in the first half of the 1980s higher than in the last half), continued growth in defense spending at its historic rate could well lead to declines in living standards.

25X1

Per capita consumption probably would continue to grow marginally for the next few years, but by mid-decade would almost certainly be in decline.[1] (C)

Even at the high end of the GNP range (2 percent per year) the trade-off between per capita consumption and defense spending would not present a comforting picture to a leadership bent on maintaining the steady increases in defense that over the past two decades have moved the USSR into a position of strategic parity with the United States. Growth in per capita consumption would average less than 1 percent annually—an imperceptible gain to the man in the street. In any case, the proclivity of the present set of Soviet leaders to continue the historic pace of defense spending may leave the new leadership, soon to arrive, with a legacy of problems carrying high political, social, and economic risks [redacted]

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**Implications**

The combination of current economic difficulties, the cumulative effect of defense spending on economic performance, and the desire to shift from an extensive to an intensive growth mode will increase the pressure for change in Soviet resource allocation decisions by mid-decade. A decision to slow the growth of defense in the 12th FYP (1986-90)—while risky politically for a new leadership, especially if international tensions are high—may be given greater currency in Moscow's deliberations, more so if Soviet leaders perceive that a slowdown in defense spending would have little impact on the USSR's total military power. [redacted]

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Because military programs require long leadtimes, many running 12 years or longer, a reduction in the rate of growth of defense spending is likely to have little impact on Soviet military capabilities during this decade. Soviet weapons that will be in the field through the 1980s will consist primarily of systems already in the forces as well as those now entering production and in the late stages of development. Decisions to scale back defense procurement—that is, to reduce the acquisition of military systems at the margin—are unlikely to have a major impact on the overall character of deployed forces until the 1990s. Finally, although a reduction in the rate of growth of defense spending in the mid-to-late 1980s could delay force improvements in some areas and pose difficult choices for Soviet defense planners, moderating the growth of spending for selected weapon systems could facilitate the allocation of additional resources to critical bottlenecks in the civilian economy [redacted]

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*This article is Secret.*

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[1] This judgment is reinforced by the possibility that the projections of GNP rest on productivity assumptions that may be too high in light of recent experience [redacted]

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USSR Monthly Review

April 1982

**Figure 3**
**USSR: Energy's Share of the Investment Increment**

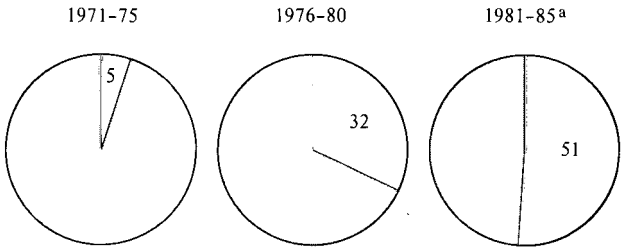


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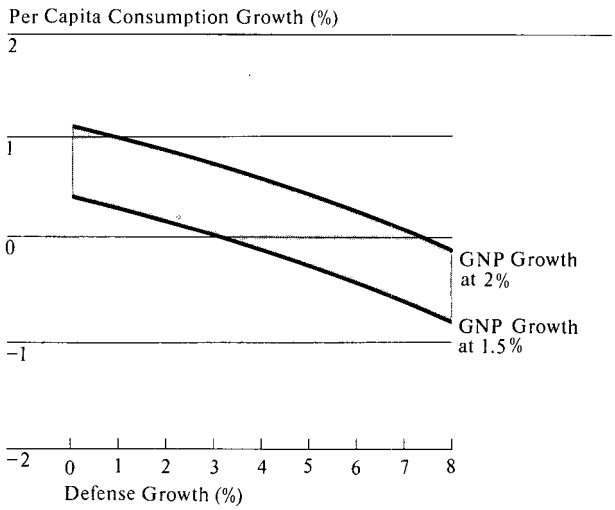
**Figure 4**
**USSR: Defense-Consumption Growth Trade-Offs (Average Annual Growth Rate 1981-1990)**

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with more capital investment. The opportunities for growth from substituting capital for labor will be limited by the continuing decline in capital productivity as well as by the need to sink most of the investment increment into capital-intensive projects (for example, energy and associated infrastructure) whose return is long deferred (see figure 3). All of this suggests that by mid-decade the Soviets will face a larger defense burden than they currently anticipate.

***Dynamic Defense Burden***

The share of GNP devoted to defense spending in a given year can be called the *static burden* of defense as it represents a snapshot picture of the burden. In addition, defense spending also influences economic performance over time through its cumulative effect on economic variables. This cumulative effect is called the *dynamic burden* of defense spending. The most revealing measure of this burden for a country's population is the change in the average annual growth rate of per capita consumption associated with a change in the growth rate of defense spending.

Figure 4 illustrates the trade-off between these two economic variables assuming that the economic trends described above result in an average GNP growth of 1.5 to 2 percent per year for the decade (with growth in the first half of the 1980s higher than in the last half). Under these conditions, continued growth in defense spending at its historic rate could well lead to declines in living standards. Per capita consumption probably would continue to grow marginally for the next few years, but by mid-decade would almost certainly be in decline.[1]

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Even at the high end of the GNP range (2 percent per year) the trade-off between per capita consumption and defense spending would not present a comforting picture to a leadership bent on maintaining the steady increases in defense that over the past two decades have moved the USSR into a position of strategic

[1] This judgment is reinforced by the possibility (discussed in the annex to this article) that the projections of GNP rest on productivity assumptions that may be too high in light of recent experience.

25X
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**Annex: Estimating the Dynamic Burden of Defense**

To estimate the dynamic burden of defense, an econometric-optimal control model of the Soviet economy called SOVCON has been developed. This annex sets forth some of the broad considerations behind its specification. 25X

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*Gross Output–Final Demand Linkage*

Conventional macromodels of the Soviet economy frequently incorporate only a general consistency between production of goods and their final uses—consumption, investment, and defense. SOVCON emphasizes this linkage by incorporating the following input-output sectors:

- Energy
- Industrial Materials and Infrastructure
- Civilian Machinery
- Weapons Production and Repair
- Construction
- Consumer Goods and Services and Other.

These six sectors support the production of consumer goods, producer durables, and defense hardware and permit the model to account for generalized bottlenecks that may occur in the economy (for example, shortages of raw materials). The model also assumes that existing capital cannot be transferred between any of these sectors in the short run (that is, within one year). This assumption is particularly relevant to the civilian machinery and weapons production sectors because it is normally assumed in econometric models of the Soviet economy that capital is transferable from defense to civilian machinery production on demand. 25X

25X

*Allocation of Labor and Investment*

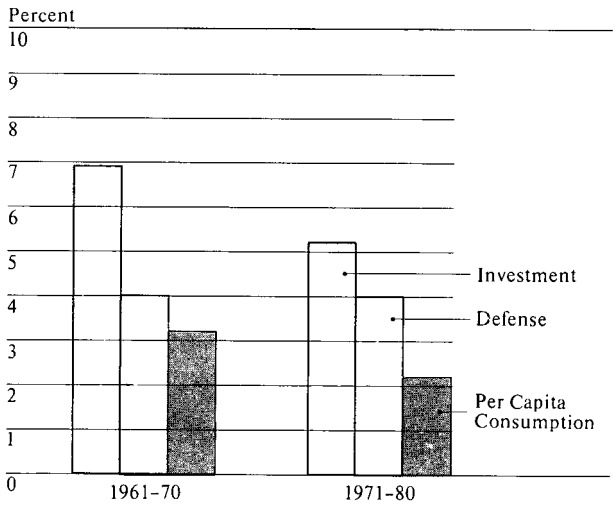
Most macromodels assume that labor and investment are allocated to sectors of the economy based on historical trends or Soviet plan data. When a change in the end-use composition of GNP is specified, say between consumption and defense, the composition of the supporting gross outputs—energy, industrial materials, and so forth—and the allocation of labor and investment to the sectors will vary. However, to allocate labor and investment to the various sectors of the economy, some criterion is needed. SOVCON 25X

## Guns and/or Butter in the 1980s (U)

Since the early 1960s, the Soviets have not had to choose between more guns or more butter. The rapidly expanding economy, fueled by large annual increases in labor, capital, and industrial raw materials, ensured enough resources for both (see figure 1). Although the economy has expanded more and more slowly over the last two decades, its growth has permitted Moscow to (1) amass an ever increasing arsenal of new weaponry, (2) provide the population with steady increases in living standards, and (3) stoke the economic furnace with rapidly growing quantities of investment goods [redacted] 25X

This is no longer the case. Soviet economic growth has fallen from nearly 4 percent per year during most of the 1970s to about 1 to 2 percent per year since 1978. Stagnation in the production of key industrial materials has crippled growth in machinery output—the source of military hardware, investment goods, and consumer durables. Oil production is virtually flat and the output of coal and steel is falling. Soft world oil prices and no growing demand for Soviet arms are limiting Moscow's hard currency earnings. Three consecutive poor grain harvests have disrupted the USSR's livestock program and worsened its hard currency payments position. And persistent food shortages and increased prices for luxury goods have left many Soviet consumers with less on their tables and less in their pockets [redacted]

**Figure 1**
**USSR: Average Annual Rates of Growth**

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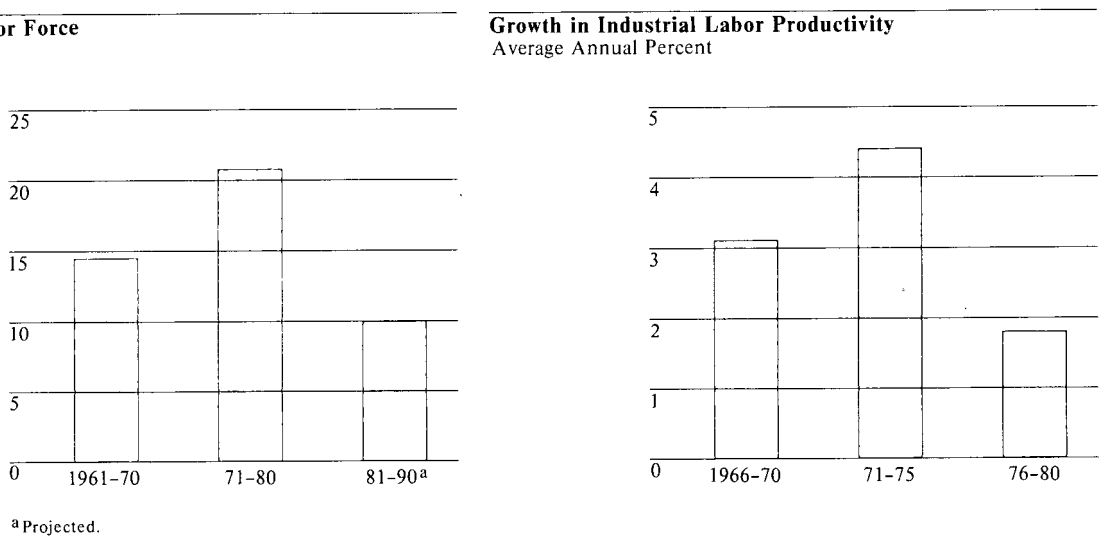
***The Economy in the 1980s***

More important, we expect this trend to continue through much of the 1980s as the costs and difficulties of obtaining industrial raw materials and fuels rise and the increments to labor and capital fall. First of all, whether or not oil production falls, energy output is clearly going to increase more slowly and become more expensive. The entire increment in energy production must come from Siberia, where costs are high and infrastructure minimal. Thus, large new investment must be made in roads, rail lines, and pipelines—items with heavy up-front costs and long leadtimes. Shifting the fuel balance toward natural gas will require a large buildup of distribution and storage facilities (that is, more investment). Because only small annual increments in total investment are planned for 1981-85, energy exploitation and associated infrastructure will absorb an increasing share of investment resources. [redacted] 25X 25X

On top of the investment crunch, increments to the labor force—declining since 1977—will continue to decline until 1986 and will not regain present levels until after 1990. With growth in labor productivity nearly at a standstill, demand for labor—especially skilled workers—is likely to increase (figure 2). But most of the new entrants into the labor force will be from the Muslim areas of the USSR, where labor is

**Figure 2**
**USSR: Growth in Labor Force and Industrial Labor Productivity**




[a] Projected.

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generally less skilled and less mobile. Thus, we expect industry will do well to achieve an average annual growth of about 2 to 3 percent. The outlook for agriculture is no better. A marked—but temporary—improvement in output is likely over the next year or two if the USSR gets a break in the weather. But we see no reason to believe that sustained increases in crop yields or livestock production will be forthcoming. On balance, we expect economic growth to be only 1 to 2 percent per year by the mid-1980s and to hover near the 1-percent level through the 12th FYP (1986-90). [redacted] 25X

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Under these conditions the competition for resources will be fierce—especially if defense spending is to continue increasing at its historic rate of about 4 percent per year. We estimate that defense will continue to grow at this rate through 1985 and that the defense share of GNP will be at least 15 percent by mid-decade. If these trends are not changed in the 12th FYP, the defense burden might approach 20 percent of GNP by the end of the decade. More important, the defense share of the annual increment to GNP could increase from the current level of one-fifth to as much as three-fourths by 1990. This would drastically reduce the ability of the Soviet leadership to allocate additional resources to investment and consumption, further eroding the annual growth dividend that is so important in balancing the competition for resources and stimulating productivity. [redacted] 25X

Even though the Soviet leadership has acknowledged that defense impinges on the economy, programs now in train as well as investment in defense facilities through the late 1970s suggest that the Soviet Union had planned to at least maintain the historical 4-percent annual growth rate of defense spending. It is equally evident, however, that the USSR's 1981-85 plan fails to account properly for the economic difficulties the Soviets are facing and for the declining ability of the economy to offset slow labor growth 25X

assumes that the objective of the planners is to increase consumption as much as possible given a specific rate of defense growth between 1980 and 1990 and a specified average annual growth rate for GNP. 25X

***Soviet Production Relationships***

The production functions in the model summarize the relationship between the growth of output and the growth of resource inputs in each sector. The results for 2-percent growth shown in figure 4 were based on a Cobb-Douglas production function that assumes that the growth of output per worker bears a fixed relation to the growth of capital per worker. This fixed proportion is a measure of the responsiveness of output with respect to capital 25X

In the Soviet Union the responsiveness of output to infusions of new capital has been declining rapidly—a fact that complicates the estimation of Soviet production relationships and markedly biases the trade-off relationship obtained using Cobb-Douglas production functions. 25X

There also are production functions in which the capital-responsiveness of output is not a constant. For example, a nonlinear relationship between the growth of output per worker and the growth of capital per worker, called the Variable Elasticity of Substitution (VES) production function, "explains" the historical data since 1960 more satisfactorily than the Cobb-Douglas function. The resulting trade-off curve gives much more pessimistic results for per capita consumption than the Cobb-Douglas function. However, the use of the VES production function may fail to sufficiently credit the Soviets with an ability to arrest the decline in capital responsiveness in the late 1980s and may therefore result in a somewhat pessimistic forecast. Nonetheless, the limited availability of resources through the mid-1980s, together with the declining trend in capital and labor productivity, suggests that the outlook for per capita consumption may be somewhat worse than depicted in figure 4. 25X

*This article is Secret.*